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# **CREATIVE CAPACITY BUILDING: ENHANCING PARTICIPATORY DESIGN WITH RURAL CAMBODIAN FARMERS**

A thesis presented in partial fulfilment of the requirements for the degree of

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## ABSTRACT

The development of technology to address challenges faced by underserved communities in developing countries has become the focus of many engineers and designers in the Western world. However, to date, such technologies have not had the level of positive impact and long-term adoption predicted. Research shows this is due to contextually-driven factors not being taken into account, such as a lack of locally available materials and skills, harsh environmental conditions and a lack of buy-in from the community. Projects which include the community in the process of identifying and prioritizing the challenges they face, generating ideas and building prototypes, have been proven to be more effective at creating solutions that are accepted and maintained. This process, known as Participatory Design (PD), is growing in popularity. However, PD practitioners still struggle to facilitate true collaboration with communities with documented challenges focusing on communities having a lack of understanding of design, problem solving and creativity as well as a lack of confidence and motivation to contribute to a long-term PD project.

This study aims to resolve this challenge by utilizing knowledge from the field of Creative Capacity Building (CCB); an education-focused field that looks to improve an individual's ability to independently problem solve and innovate through structured, hands-on training sessions. Based on literature, a CCB programme was designed, to be completed at the beginning of a long-term PD project. This aimed to be succinct, engaging and socio-culturally appropriate to the specific community. A six-month, multi-case study was undertaken with several partner organizations in rural Cambodia. The study aimed to collaborate with rural people with disability, to create technology that improved their ability to engage in agricultural practices.

Results showed that the implementation of CCB positively affected the community's ability to contribute contextual insights to the project as well as their understanding of the design process and motivation to contribute. CCB was not found to improve the community's ability to critique existing designs or their ability to create prototypes, competencies that were already strong; nor their ability to generate ideas, a competency that was weak. Other findings included a positive relationship between the use of making-style activities and community motivation, an inverse relationship between group size and community ability to express opinions and a new conceptual model to describe the collaborative partnership between designer and community.

**Keywords:** participatory design; capacity building; agriculture; developing context; humanitarian technology development; humanitarian engineering

## Summary of Publications

Four papers have been published and one paper is under review as part of the doctoral research presented in this thesis. Parts of all five papers have been integrated into relevant thesis sections.

### Paper I:

Drain, A., Shekar, A., & Grigg, N. (2017). 'Involve me and I'll understand': creative capacity building for participatory design with rural Cambodian farmers. CoDesign, 1-18. doi:10.1080/15710882.2017.1399147

### Paper II:

Drain, A., Shekar, A., & Grigg, N. (2018). Participatory design with People with Disability in Rural Cambodia: The Creativity Challenge. The Design Journal. doi:10.1080/14606925.2018.1488923

### Paper III:

Drain, A., Shekar, A., & Grigg, N. (2018). Insights, Solutions and Empowerment: a framework for evaluating participatory design. CoDesign. doi:10.1080/15710882.2018.1540641

### Paper IV:

Drain, A., Shekar, A., Grigg, N., & McCreery, M. (2018). The collaborative design of a low-cost, accessible rice seeder for rural Cambodia: Trade-offs and challenges. IEEE Catalog Number: CFP18GHT-ART. : IEEE Global Humanitarian Technology Conference

### Paper V:

Drain, A., & Sanders, E. (2018, Under Review). A Collaboration System Model for Planning and Evaluating Participatory Design Projects. International Journal of Design.

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I began this research journey as a commercial product developer, with little understanding of the world and little understanding of how to collaborate with other cultures. I am thankful to say, I am now a participatory designer with *some* understanding of the world, and a great deal more understanding of how to collaborate with others. While this transformation may seem subtle to the outside world, it has been life changing, and I am extremely grateful for the opportunity.

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## List of frequently used abbreviations

PD	Participatory Design
HTD	Humanitarian Technology Development
HTD-using-PD	Humanitarian Technology Development using Participatory Design
CCB	Creative Capacity Building
PwD	Person with Disability
ADG	Agile Development Group
LFTW	Light For The World Cambodia
EWB	Engineers Without Borders Australia
D(n)	Designer (n)
P(n)	Participant (n)



# Table of Contents

<b>INTRODUCTION .....</b>	<b>1</b>
<b>1.1 The Research Topic and Context .....</b>	<b>1</b>
<b>1.2 Current Knowledge Gap and Need for Research .....</b>	<b>3</b>
<b>1.3 Value of Research.....</b>	<b>4</b>
<b>1.4 Research Questions.....</b>	<b>4</b>
<b>1.5 Outline of this Thesis.....</b>	<b>6</b>
<b>LITERATURE REVIEW.....</b>	<b>8</b>
<b>2.1 The Design Process.....</b>	<b>9</b>
2.1.1 New Product Development .....	9
2.1.2 Product Development for Developing Markets.....	10
2.1.3 Humanitarian Technology Development.....	12
<b>2.2 Participatory Development.....</b>	<b>15</b>
2.2.1 Participatory Techniques for International Development .....	15
<b>2.3 Participatory Design .....</b>	<b>16</b>
2.3.1 Origin .....	17
2.3.2 Present Day.....	17
2.3.3 Theoretical Frameworks .....	18
2.3.4 Challenges of HTD-using-PD .....	20
2.3.5 Collaboration in PD .....	23
<b>2.4 A Capacity Building Approach .....</b>	<b>29</b>
2.4.1 Definition .....	31
2.4.2 Content Development .....	32
<b>2.5 The Adapted Making Framework.....</b>	<b>35</b>
<b>2.6 People with Disabilities .....</b>	<b>36</b>
2.6.1 Assistive Technology.....	39
<b>2.7 Cambodia .....</b>	<b>40</b>
2.7.1 History.....	40
2.7.2 Religion .....	42
2.7.3 Education .....	42
2.7.4 People with Disability in Cambodia .....	43

<b>2.8</b>	<b>Important Literature .....</b>	<b>45</b>
2.8.1	Participatory Design.....	45
2.8.2	Capacity Building.....	46
2.8.3	Cambodian Context .....	46
<b>2.9</b>	<b>Chapter Summary .....</b>	<b>47</b>
<b>METHODOLOGY .....</b>		<b>48</b>
<b>3.1</b>	<b>Research Aim .....</b>	<b>49</b>
3.1.1	Scope and Boundaries of the Research .....	49
3.1.2	Research Questions and Objectives.....	49
<b>3.2</b>	<b>Epistemological and Ontological Perspectives .....</b>	<b>51</b>
3.2.1	Ontological Perspectives.....	51
3.2.2	Epistemological Perspectives.....	51
<b>3.3</b>	<b>Research Methodology.....</b>	<b>52</b>
3.3.1	Appraisal of Alternative Research Methodologies .....	52
3.3.2	Chosen Research Methodology.....	55
<b>3.4</b>	<b>Research Plan.....</b>	<b>58</b>
3.4.1	Stage 1 .....	58
3.4.2	Stage 2 .....	58
3.4.3	Stage 3 .....	58
3.4.4	Stage 4 .....	59
3.4.5	Timeline .....	59
<b>3.5</b>	<b>Data Collection Procedures.....</b>	<b>62</b>
3.5.1	Documents.....	62
3.5.2	Interview .....	63
3.5.3	Observation .....	64
3.5.4	Physical Artefacts.....	66
3.5.5	Summary of Data Sources.....	67
<b>3.6</b>	<b>Data Analysis .....</b>	<b>69</b>
3.6.1	Preparation for Analysis.....	69
3.6.2	Analytical Strategy .....	70
<b>3.7</b>	<b>Limitations of Methodology.....</b>	<b>71</b>
3.7.1	Reliability .....	71
3.7.2	Validity .....	72
3.7.3	Comparison to Literature.....	73

<b>3.8</b>	<b>Ethical Considerations .....</b>	<b>73</b>
3.8.1	Respect for Persons .....	74
3.8.2	Minimisation of Harm .....	74
3.8.3	Social and Cultural Sensitivity .....	74
<b>3.9</b>	<b>Chapter Summary .....</b>	<b>74</b>
<b>CREATIVE CAPACITY BUILDING CONTENT DEVELOPMENT.....</b>		<b>75</b>
<b>4.1</b>	<b>Content Development Process.....</b>	<b>76</b>
4.1.1	Aims .....	76
4.1.2	Learners .....	76
4.1.3	Access .....	77
4.1.4	Trainers .....	77
4.1.5	Needs Analysis .....	78
4.1.6	Lessons from Previous CCB.....	78
<b>4.2</b>	<b>CCB Content Development – Version 1.....</b>	<b>79</b>
4.2.1	Overview .....	80
4.2.2	Critique of Version 1 .....	80
4.2.3	Version 1 Development Workshop.....	81
<b>4.3</b>	<b>Version 2.....</b>	<b>85</b>
4.3.1	Overview .....	85
4.3.2	Session 1 and 2 .....	85
4.3.3	Session 3 .....	92
4.3.4	Session 4 .....	94
<b>4.4</b>	<b>Version 3.....</b>	<b>95</b>
4.4.1	Overview .....	95
<b>4.5</b>	<b>Chapter Summary .....</b>	<b>95</b>
<b>CASE SUMMARY.....</b>		<b>96</b>
<b>5.1</b>	<b>Aims .....</b>	<b>97</b>
<b>5.2</b>	<b>Partner Organizations.....</b>	<b>97</b>
<b>5.3</b>	<b>Designers .....</b>	<b>98</b>
<b>5.4</b>	<b>Community .....</b>	<b>99</b>
<b>5.5</b>	<b>Workshop Venue .....</b>	<b>101</b>
<b>5.6</b>	<b>Timeline.....</b>	<b>103</b>

5.6.1	Design Process .....	104
<b>5.7</b>	<b>Data Collection.....</b>	<b>105</b>
<b>5.8</b>	<b>Project 1 Cases .....</b>	<b>106</b>
5.8.1	Group Formation .....	106
<b>5.9</b>	<b>Creative Capacity Building .....</b>	<b>107</b>
<b>5.10</b>	<b>Pre-design.....</b>	<b>112</b>
<b>5.11</b>	<b>Case 1 – Rice Seeding .....</b>	<b>114</b>
5.11.1	Generative Design .....	114
5.11.2	Evaluative Design .....	120
5.11.3	Post Design .....	126
5.11.4	Technology Evaluation .....	127
<b>5.12</b>	<b>Case 2 – Plough Cart .....</b>	<b>127</b>
5.12.1	Generative Design .....	127
5.12.2	Evaluative Design .....	130
5.12.3	Post Design .....	136
5.12.4	Technology Evaluation .....	136
<b>5.13</b>	<b>Case 3 – Chicken Coop .....</b>	<b>136</b>
5.13.1	Generative Design .....	136
5.13.2	Evaluative Design .....	139
5.13.3	Technology Evaluation .....	142
<b>5.14</b>	<b>Effectiveness of Collaborative Competencies .....</b>	<b>142</b>
5.14.1	An Ability to Express Opinions.....	144
5.14.2	An Ability to Generate Insightful Ideas.....	144
5.14.3	An Ability to Create Insightful Prototypes.....	144
5.14.4	An Understanding of the Design Process/Activity.....	145
5.14.5	Motivation to Contribute .....	145
<b>5.15</b>	<b>Chapter Summary .....</b>	<b>145</b>
5.15.1	Research Issues .....	145
<b>CROSS-CASE ANALYSIS.....</b>		<b>148</b>
<b>6.1</b>	<b>Analytical Process .....</b>	<b>149</b>
<b>6.2</b>	<b>Baseline .....</b>	<b>151</b>
6.2.1	Participant Overview .....	152
6.2.2	Collaborative Competencies.....	157

<b>6.3</b>	<b>Collaboration across the PD Project .....</b>	<b>163</b>
6.3.1	Pre-design .....	163
6.3.2	Generative Design.....	169
6.3.3	Evaluative Design .....	184
6.3.4	Post Design .....	200
6.3.5	Project 1 Collaboration Summary.....	207
<b>6.4</b>	<b>Discussion.....</b>	<b>210</b>
6.4.1	Impact of the Product.....	210
6.4.2	Impact of the Process .....	213
<b>6.5</b>	<b>Research Findings.....</b>	<b>218</b>
6.5.1	Minor Findings .....	218
<b>6.6</b>	<b>Chapter Summary .....</b>	<b>221</b>
6.6.1	Richness of Case Information .....	221
<b>KEY FINDINGS.....</b>		<b>222</b>
<b>7.1</b>	<b>Research Question 1.....</b>	<b>223</b>
7.1.1	Key Evidence .....	223
7.1.2	Finding 1: There are Three Types of Collaboration used in HTD-using-PD .....	223
7.1.3	Finding 2: There are Two Types of Project Undertaken using a HTD-using-PD Approach.....	224
7.1.4	Finding 3: Recent HTD-using-PD Projects .....	225
7.1.5	Summary .....	226
<b>7.2</b>	<b>Research Question 2.....</b>	<b>226</b>
7.2.1	Key Evidence .....	226
7.2.2	Finding 1: Collaborative Competencies .....	227
7.2.3	Finding 2: Participatory Design Collaboration Model .....	231
7.2.4	Summary .....	239
<b>7.3</b>	<b>Research Question 3.....</b>	<b>243</b>
7.3.1	Key Evidence .....	243
7.3.2	Finding 1: CCB Content Development Process .....	243
7.3.3	Finding 2: Practitioner Handbook.....	245
7.3.4	Summary .....	247
<b>7.4</b>	<b>Research Question 4.....</b>	<b>248</b>
7.4.1	Key Evidence .....	248
7.4.2	Finding 1: CCB Improves the Collaborative Competencies <i>Contextual Insights, Design Process</i> and <i>Motivation</i> .....	249

7.4.3	Finding 2: CCB Does Not Improve the Collaborative Competencies <i>Design Critique, Ideas or Prototyping</i> .....	258
7.4.4	Finding 3: Involvement in a PD Project Improved the Collaborative Competencies <i>Contextual Insights, Design Critique, Design Process and Motivation</i> .....	266
<b>7.5</b>	<b>Understanding the Value of CCB</b> .....	<b>270</b>
7.5.1	Time for CCB vs Other Activities .....	270
7.5.2	Ethical Concerns.....	272
<b>7.6</b>	<b>Chapter Summary</b> .....	<b>273</b>
	<b>CONTRIBUTION TO THEORY AND PRACTICE</b> .....	<b>275</b>
<b>8.1</b>	<b>Focus of this Study</b> .....	<b>276</b>
<b>8.2</b>	<b>Contribution to PD Theory</b> .....	<b>276</b>
8.2.1	Categorization of the Current HTD-using-PD Research Field.....	276
8.2.2	Development of Collaborative Competencies .....	277
8.2.3	Development of the PDC Model .....	277
8.2.4	Improved Understanding of the Role that CCB can Play in Enhancing the Quality of Collaboration 277	
8.2.5	Summary of Publications .....	277
<b>8.3</b>	<b>Contribution to Practice</b> .....	<b>278</b>
8.3.1	Development of CCB Content Development Process, Illustrated through Project 1.....	278
8.3.2	Development of a Practitioner Handbook.....	278
8.3.3	Development of Monitoring and Evaluation Plan that Allows for Rigorous Reporting on Impact of Process 279	
8.3.4	Examples of Real-World Value.....	279
<b>8.4</b>	<b>Practitioner Implications</b> .....	<b>280</b>
8.4.1	What is the Focus of the PD Project? .....	280
8.4.2	When is CCB Valuable? .....	280
8.4.3	How to Maximize Collaboration in PD .....	280
<b>8.5</b>	<b>Reliability</b> .....	<b>281</b>
<b>8.6</b>	<b>Validity</b> .....	<b>281</b>
<b>8.7</b>	<b>Generalizability</b> .....	<b>282</b>
<b>8.8</b>	<b>Limitations</b> .....	<b>284</b>
<b>8.9</b>	<b>Future Research</b> .....	<b>285</b>

8.10 Concluding Remarks .....	286
<i>References.....</i>	<i>287</i>
<i>Appendix A - Research Tools .....</i>	<i>297</i>
<i>Appendix B - Capacity Building Content Version 3 .....</i>	<i>302</i>
<i>Appendix C - Challenges identified by community in Project 1 .....</i>	<i>314</i>
<i>Appendix D - Idea generation for Project 1.....</i>	<i>318</i>
<i>Appendix E - Project 1 Technology Evaluation .....</i>	<i>324</i>
<i>Appendix F - Full coding table for Project 1.....</i>	<i>332</i>

## Table of Figures

Figure 1 - Outline of the thesis.....	7
Figure 2 – Stage-Gate Process (Cooper, 2014). ....	9
Figure 3 - Double Diamond Design Process (Clune & Lockrey, 2014).....	10
Figure 4 - Co-Design and Implementation Process (Murcott, 2007) .....	13
Figure 5 - Appropriate Technology Design Methodology (Sianipar et al., 2013).....	14
Figure 6 - Hermeneutics-Oriented Design Model (Hussain & Sanders, 2012).....	18
Figure 7 - The <i>Making</i> Framework (Sanders & Stappers, 2014) .....	19
Figure 8 - The Use-Oriented Design Cycle (Simonsen & Robertson, 2012) .....	20
Figure 9 - Traditional Model for Participatory Design (Hussain et al., 2012) .....	25
Figure 10 - Adapted Model for Participatory Design (Hussain et al., 2012) .....	25
Figure 11 - Evolution of Participatory Design projects for marginalized people (Hussain et al., 2012).....	26
Figure 12 - Knowledge and design activity model (Christiaans, 1992) .....	27
Figure 13 - Knowledge transfer conceptual model (Diehl, 2010) .....	31
Figure 14 - Adapted <i>Making</i> Framework .....	36
Figure 15 - Bio-psychosocial model (WHO, 2002) .....	38
Figure 16 - Secondary school education in Cambodia (De Walque, 2006).....	43
Figure 17 - Contributing areas of research .....	45
Figure 18 - Overview of research structure .....	49
Figure 19 - Summary of research stages.....	58
Figure 20 - Summary of research plan .....	61
Figure 21 - Overview of CCB content development .....	76
Figure 22 - Takeo training session with farming group .....	86
Figure 23 - Cambodian facilitator presenting the design process (Taha, 2011) .....	87
Figure 24 - Examples of idea generation sketches from CCB session.....	88
Figure 25 - Bottle-design prototype.....	89
Figure 26 - The adapted design process .....	91
Figure 27 - Materials used to pilot Session 3 .....	93
Figure 28 - Successful testing of idea.....	94
Figure 29 - Image of Cambodia showing Kampong Tralach District (Google, n.d.-b) .....	100
Figure 30 - Image of Kampong Chhnang Province (Google, n.d.-a).....	100
Figure 31 - Participants sitting on chairs in the pagoda.....	102
Figure 32 - Participants sitting on the floor in the pagoda .....	102
Figure 33 - Participants sitting at desks in a school classroom.....	103



Figure 34 - Participants sitting on the floor in a school classroom .....	103
Figure 35 - Overview of Project 1 and cases 1, 2 and 3 .....	106
Figure 36 - Presentation of the design process .....	108
Figure 37 - English translation of the design process .....	108
Figure 38 - Participant testing mango picker prototype.....	109
Figure 39 - Participant testing mango picker prototype.....	109
Figure 40 - Modified mango picker prototype.....	110
Figure 41 - Participants experimenting during the banana boost activity .....	111
Figure 42 - Traditional broadcasting rice seeding process .....	115
Figure 43 - Rice seeding process using a drum seeder .....	115
Figure 44 - Model making process for rice seeder in case 1.....	116
Figure 45 - Rice seeding model made in case 1 .....	117
Figure 46 - Design requirements board for case 1.....	118
Figure 47 - CAD drawing of doser-plate.....	118
Figure 48 - Illustration of seed dosing system .....	119
Figure 49 - Lab testing of dosing-plate for Team 1 .....	119
Figure 50 - Team 1 building a drum seeder prototype .....	120
Figure 51 - Participants discussing improvements for rice seeding prototype version 1.....	121
Figure 52 - Participant testing the rice seeding prototype version 2 .....	121
Figure 53 - Engineering design of rice seeder for case 1 .....	122
Figure 54 - Original and improved doser plate design.....	122
Figure 55 - Step-by-step assembly instructions for Team 1.....	123
Figure 56 - Rice seeder made independently by case 1 participant.....	123
Figure 57 - Construction of community designed rice seeder.....	124
Figure 58 - Testing of community designed rice seeder .....	125
Figure 59 - Construction of D11 designed rice seeder.....	126
Figure 60 - Testing of D11 designed rice seeder .....	126
Figure 61 - Brainstorming page from case 2.....	128
Figure 62 - Model of prosthetic attachment made during model-making in case 2 .....	129
Figure 63 - Idea screening matrix for plough cart project .....	130
Figure 64 - Participants constructing a prototype in case 2 .....	131
Figure 65 - Participants and designers discussing improvements to their Workshop 3 prototype ...	131
Figure 66 - Force analysis of Team 2 original plough cart design .....	132
Figure 67 - Prototype built in engineering lab for testing .....	132

Figure 68 - New plough cart design .....	133
Figure 69 - User positions on cart.....	133
Figure 70 - Step-by-step assembly instructions for plough cart .....	134
Figure 71 - Case 2 members building the plough cart wooden frame .....	134
Figure 72 - Case 2 final prototype of the plough cart .....	135
Figure 73 - Participant attempting to test plough cart .....	135
Figure 74 - Completed materials activity with case 3 participants.....	137
Figure 75 - Model of chicken coop made during model-making in case 3 .....	138
Figure 76 - Design requirements board for case 3.....	138
Figure 77 - Case 3 team planning the process of raising the chicken coop doorframe.....	140
Figure 78 - Case 3 team testing chicken coop door designs .....	140
Figure 79 - Step-by-step instructions for chicken coop modifications .....	141
Figure 80 - Overview of Project 1 and cases 1, 2 and 3 .....	149
Figure 81 - Visualization of changes in competencies over time.....	150
Figure 82 - Example of a competency spider diagram.....	150
Figure 83 - Range of participant ages for Project 1 .....	152
Figure 84 - Baseline participant design process.....	160
Figure 85 - Cognitive map of the <i>motivation</i> competency .....	161
Figure 86 - Visualization of baseline collaborative competencies .....	162
Figure 87 - Visualization of pre-design collaborative competencies .....	169
Figure 88 - Case 1 brainstorming workshop document.....	171
Figure 89 - Model of rice seeder made by the case 1 team .....	172
Figure 90 - Visualization of generative design collaborative competencies in case 1.....	174
Figure 91 - Materials collage created by case 2 team .....	175
Figure 92 - Participant presenting a new prosthetic foot design .....	176
Figure 93 - Visualization of generative design collaborative competencies in case 2.....	178
Figure 94 - Participants playing Marco-Polo to build awareness of blind mobility challenges .....	179
Figure 95 - Visualization of generative design collaborative competencies in case 3.....	183
Figure 96 - Visualization of generative design collaborative competencies in cases 1, 2 and 3 .....	184
Figure 97 - Case 1 team constructing a rice seeder prototype.....	186
Figure 98 - Case 1 prototyping; several female participants watch as male participants use tools ..	189
Figure 99 - Visualization of evaluative design collaborative competencies in case 1 .....	190
Figure 100 - Original and modified design for plough cart frame joints.....	191
Figure 101 - Female participants notching wood for plough cart prototype in Workshop 3.....	193

Figure 102 - Change in conceptual understanding of case 2 team.....	194
Figure 103 - Visualization of evaluative design collaborative competencies in case 2 .....	195
Figure 104 - The case 3 team discussing the doorframe modification process.....	198
Figure 105 - Visualization of evaluative design collaborative competencies in case 3 .....	199
Figure 106 - Visualization of evaluative design collaborative competencies in cases 1, 2 and 3 .....	199
Figure 107 - Visualization of post design collaborative competencies in case 1 .....	204
Figure 108 - Visualization of post design collaborative competencies in case 2 .....	206
Figure 109 - Visualization of post design collaborative competencies in cases 1 and 2 .....	207
Figure 110 - Ability level vs project stage for each collaborative competency .....	208
Figure 111 - Summary of all competencies vs project stage .....	209
Figure 112 - Illustration of step change and longitudinal change in creative capacity .....	214
Figure 113 - Change in conceptual understanding across the PD project.....	217
Figure 114 - Anonymous workshop feedback jars.....	220
Figure 115 - Cluster diagram of type of collaboration vs type of project.....	225
Figure 116 - Participatory Design Collaboration Model.....	231
Figure 117 - Percentage of total occurrences coded with Motivation for each type of activity .....	237
Figure 118 - CCB content development process.....	244
Figure 119 - Practitioner handbook example page.....	247
Figure 120 - Visualization of baseline and pre-design collaborative competencies.....	249
Figure 121 - Visualization of <i>ideas</i> competency across the project.....	250
Figure 122 - Visualization of <i>design process</i> competency across the project .....	250

## Table of Tables

Table 1 - Design paradigm summary .....	15
Table 2 - Summary of Challenges in PD Projects .....	21
Table 3 - Thematic analysis of challenges faced in HTD-using-PD projects .....	23
Table 4 - The Design Participation Ladder (Hussain, 2010) .....	24
Table 5 – Collaborative competencies for effective PD .....	28
Table 6 - Individual levels of Capacity Building (Mutoro, 2013) .....	33
Table 7 - Seven Steps for Planning Capacity Building (Eade, 1997) .....	34
Table 8 - Example of bio-psychosocial description .....	38
Table 9 - Socio-economic data of Cambodia (UNICEF, 2013) .....	43
Table 10 - Summary of important research .....	47
Table 11 - Multi-case research design .....	56
Table 12 - Overview of Field Trips .....	60
Table 13 - Sources of Evidence (Yin, 2013) .....	62
Table 14 - Overview of documents .....	63
Table 15 - Overview of interviews .....	64
Table 16 - Forms of ethnography .....	65
Table 17 - Observer involvement in ethnography (Gold, 1958) .....	65
Table 18 - Overview of observations .....	66
Table 19 - Overview of physical artefacts .....	67
Table 20 - Summary of Data Sources .....	68
Table 21 - Data Source Abbreviations .....	69
Table 22 - Data Analysis process .....	70
Table 23 - Overview of CCB content version 1 .....	80
Table 24 - Overview of CCB content version 2 .....	85
Table 25 - Overview of CCB program version 3 (final version) .....	95
Table 26 - Table of involved professionals in Project 1 .....	98
Table 27 - Table of designers and workshop attendance .....	99
Table 28 - Example of a workshop cycle .....	104
Table 29 - Timeline of Project 1 workshops .....	104
Table 30 - Project 1 activity summary .....	104
Table 31 - Group formation table for Project 1 .....	106
Table 32 - Overview of all cases inside Project 1 .....	113
Table 33 - Case 1 overview .....	114

Table 34 - Table of design changes for rice seeder.....	125
Table 35 - Case 2 overview .....	127
Table 36 - Case 3 overview .....	136
Table 37 - Description of collaborative competencies .....	143
Table 38 - Summary of participants interviewed in Project 1 .....	151
Table 39 - Overview of participant age and disability .....	152
Table 40 - Participant responses from interview before CCB.....	155
Table 41 - Summary of shorthand terms .....	157
Table 42 - Competency vs description coding from CCB sessions.....	157
Table 43 - <i>Opinion</i> sub-themes vs description coding from CCB sessions.....	158
Table 44 - Competency vs description coding from pre-design .....	163
Table 45 - Participant responses from interview after CCB.....	165
Table 46 - <i>Design process</i> competency and sub-themes vs description coding from pre-design.....	166
Table 47 - Competency vs description coding from generative design.....	169
Table 48 - Overview of all cases inside of Project 1.....	170
Table 49 - Participant responses from interview during generative design for case 1 .....	173
Table 50 - Competency vs description coding from evaluative design .....	184
Table 51 - Prototypes competency vs description coding for evaluative design case 1 .....	187
Table 52 - Participant response from interview during evaluative design for case 1 .....	189
Table 53 - Competency vs description coding from post design .....	200
Table 54 - Enjoyment text units from participant exit interviews.....	219
Table 55 - Enjoyment text units from facilitator interviews.....	219
Table 56 - Anonymous workshop feedback from Project 1.....	220
Table 57 - Categorization of HTD-using-PD projects.....	225
Table 58 - <i>Opinion</i> sub-themes vs description coding from CCB sessions.....	228
Table 59 - Text units for RQ2 - Technical skills theme .....	230
Table 60 - Type of activity vs motivation competency descriptions.....	237
Table 61 - Text units for RQ2 – PDC Model components .....	240
Table 62 - Text units for RQ2 - PDC Model components .....	241
Table 63 - Text units for RQ2 - PDC Model components .....	242
Table 64 - Text Units showing change in understanding of design process .....	253
Table 65 - Text units for Contextual insights – Positively affected collaborative competencies .....	255
Table 66 - Text units for Design process – Positively affected collaborative competencies .....	256
Table 67 - Text units for Motivation – Positively affected collaborative competencies .....	257

Table 68 - Text units for Design critique – Unaffected collaborative competencies.....	263
Table 69 - Text units for Ideas – Unaffected collaborative competencies .....	264
Table 70 - Text units for Prototypes – Unaffected collaborative competencies .....	265
Table 71 - Design stage vs type of activity .....	267
Table 72 - Group size vs opinions competency descriptions .....	268
Table 73 - Summary of publications during doctoral period .....	278